

Their Blues are several kinds of *Smalts*, and *Verditures*, and *Bise*, and *Ultramarine*, and *Indico*, which last has many dirty or dark parts intermixt with it.

Their compounded colour'd bodies, as *Pink*, and *Verdigrese*, which are Greens, the one a *Popingay*, the other a *Sea-green*; then *Lac*, which is a very lovely *Purple*.

To which may be added their Black and White, which they also usually call Colours, of each of which they have several kinds, such as *Bone Black*, made of *Ivory* burnt in a close Vessel, and *Blue Black*, made of the small coal of *Willow*, or some other Wood; and *Cullens earth*, which is a kind of brown Black, &c. Their usual Whites are either artificial or natural *White Lead*, the last of which is the best they yet have, and with the mixing and tempering these colours together, are they able to make an imitation of any colour whatsoever: Their Reds or deep Yellows, they can dilute by mixing pale Yellows with them, and deepen their pale by mixing deeper with them; for it is not with *Opacous* colours as it is with transparent, where by adding more Yellow to yellow, it is deepned, but in *opacous* diluted. They can whiten any colour by mixing White with it, and darken any colour by mixing Black, or some dark and dirty colour. And in a word, most of the colours, or colour'd bodies they use in Limning and Painting, are such, as though mixt with any other of their colours, they preserve their own hue, and by being in such very smal parts dispers'd through the other colour'd bodies, they both, or altogether represent to the eye a *compositum* of all; the eye being unable, by reason of their smalness, to distinguish the peculiarly colour'd particles, but receives them as one intire *compositum*: whereas in many of these, the *Microscope* very easily distinguishes each of the compounding colours distinct, and exhibiting its own colour.

Thus have I by gently mixing *Vermilion* and *Bise* dry, produc'd a very fine Purple, or mixt colour, but looking on it with the *Microscope*, I could easily distinguish both the Red and the Blue particles, which did not at all produce the *Phantasm* of Purple.

To sum up all therefore in a word, I have not yet found any solid colour'd body, that I have yet examin'd, perfectly *opacous*; but those that are least transparent are *Metalline* and *Mineral* bodies, whose particles generally, seeming either to be very small, or very much flaw'd, appear for the most part *opacous*, though there are very few of them that I have look'd on with a *Microscope*, that have not very plainly or circumstantially manifested themselves transparent.

And indeed, there seem to be so few bodies in the world that are *in minimis* opacous, that I think one may make it a rational *Query*, Whether there be any body absolutely thus *opacous*? For I doubt not at all (and I have taken notice of very many circumstances that make me of this mind) that could we very much improve the *Microscope*, we might be able to see all those bodies very plainly transparent, which we now are fain onely to ghes at by circumstances. Nay, the Object Glasses we yet make use of are such, that they make many transparent bodies to the

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eye, seem *opacous* through them, which if we widen the Aperture a little, and cast more light on the objects, and not charge the Glasses so deep, will again disclose their transparency.

Now, as for all kinds of colours that are dissolvable in Water, or other liquors, there is nothing so manifest, as that all those ting'd liquors are transparent; and many of them are capable of being diluted and compounded or mixt with other colours, and divers of them are capable of being very much chang'd and heightned, and fixt with several kinds of *Saline menstrums*. Others of them upon compounding, destroy or viti-ate each others colours, and precipitate, or otherwise very much alter each other's tincture. In the true ordering and diluting, and deepning, and mixing, and fixing of each of which, consists one of the greatest mysteries of the Dyers; of which particulars, because our *Microscope* affords us very little information, I shall add nothing more at present; but onely that with a very few tinctures order'd and mixt after certain ways, too long to be here set down, I have been able to make an appearance of all the various colours imaginable, without at all using the help of *Salts*, or *Saline menstrums* to vary them.

As for the mutation of Colours by *Saline menstrums*, they have already been so fully and excellently handled by the lately mention'd Incomparable *Author*, that I can add nothing, but that of a multitude of trials that I made, I have found them exactly to agree with his Rules and Theories; and though there may be infinite instances, yet may they be reduc'd under a few Heads, and compris'd within a very few Rules. And generally I find, that *Saline menstrums* are most operative upon those colours that are Purple, or have some degree of Purple in them, and upon the other colours much less. The *spurious* pulses that compose which, being (as I formerly noted) so very neer the middle between the true ones, that a small variation throws them both to one side, or both to the other, and so consequently must make a vast mutation in the formerly appearing Colour.

Observ. XI. Of Figures observ'd in small Sand.

And generally seems to be nothing else but exceeding small Pebbles, or at least some very small parcels of a bigger stone; the whiter kind seems through the *Microscope* to consist of small transparent pieces of some pellucid body, each of them looking much like a piece of *Alum*, or *Salt Gem*; and this kind of Sand is angled for the most part irregularly, without any certain shape, and the granules of it are for the most part flaw'd, though amongst many of them it is not difficult to find some that are perfectly pellucid, like a piece of clear Crystal, and divers likewise most curiously shap'd, much after the manner of the bigger *Stiria* of Crystal, or like the small *Diamants* I observ'd in certain *Flints*, of which I shall by and by relate; which last particular seems to argue, that this kind of Sand is not made